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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/002,035	11/01/2001	Jeffrey W. Carr	CARR-01000US1	5043

7590

07/08/2002

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EXAMINER

OLSEN, ALLAN W

ART UNIT

PAPER NUMBER

1763

DATE MAILED: 07/08/2002

7

Please find below and/or attached an Office communication concerning this application or proceeding.

T.D

Office Action Summary

Application No.

10/002,035

Applicant(s)

CARR, JEFFREY W.

Examiner

Allan W. Olsen

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 November 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 16 and 17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 and 18-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5. 6) ☐ Other: _____

DETAILED ACTION

The papers received on May 9, 2002 (certificate of mailing dated April 26, 2002) have not been made part of the permanent records of the United States Patent and Trademark Office (Office) for this application (37 CFR 1.52(a)) because of damage from the United States Postal Service irradiation process. The above-identified papers, however, were not so damaged as to preclude the USPTO from making a legible copy of such papers. Therefore, the Office has made a copy of these papers, substituted them for the originals in the file, and stamped that copy:

COPY OF PAPERS ORIGINALLY FILED

If applicant wants to review the accuracy of the Office's copy of such papers, applicant may either inspect the application (37 CFR 1.14(d)) or may request a copy of the Office's records of such papers (*i.e.*, a copy of the copy made by the Office) from the Office of Public Records for the fee specified in 37 CFR 1.19(b)(4). Please do **not** call the Technology Center's Customer Service Center to inquiry about the completeness or accuracy of Office's copy of the above-identified papers, as the Technology Center's Customer Service Center will **not** be able to provide this service.

If applicant does not consider the Office's copy of such papers to be accurate, applicant must provide a copy of the above-identified papers (except for any U.S. or foreign patent documents submitted with the above-identified papers) with a statement that such copy is a complete and accurate copy of the originally submitted documents. If applicant provides such a copy of the above-identified papers and statement within **THREE MONTHS** of the mail date of this Office action, the Office will add the original mailroom date and use the copy provided by applicant as the permanent Office record of the above-identified papers in place of the copy made by the Office. Otherwise, the Office's copy will be used as the permanent Office record of the above-identified papers (*i.e.*, the Office will use the copy of the above-identified papers made by the Office for examination and all other purposes). This three-month period is not extendable.

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-15 and 18-20, drawn to a method for shaping surfaces, classified in class 216, subclass 067.
- II. Claims 16 and 17, drawn to a plasma torch, classified in class 156, subclass 345.39.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus can be used for shaping surfaces that are not damage free or for processes other than shaping, such as material removal.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

During a telephone conversation between Examiner Alejandro and Sheldon Meyer on May 16, 2002 a provisional election was made without traverse to prosecute the invention of group I, claims 1-15 and 18-20. Affirmation of this election must be made by applicant in replying to this Office action. Claims 16 and 17 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 15 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 15 "silicon hexafluorine" should be --sulfur hexafluoride--.

Claim 19 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for failing to specifically indicate which claim it is dependent upon.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 6, 7, 9-11 and 18-20 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,811,021 issued to Zarowin et al. (hereinafter, Zarowin '021).

Zarowin '021 teaches a plasma method for the additive and subtractive shaping of a surface (abstract). Zarowin '021 teaches that the method does not generate surface damage such as the cracks and stress that arise from conventional grinding and mechanical polishing. As a result the process is capable of micro-smoothing a surface.

Zarowin '021 teaches that the process, which is carried out at about room temperature, can be used to shape a number of different materials including quartz and silicon and for shaping aspheric optical elements. See column 5, lines 29-39 and 45; column 15, lines 35-60. The method uses a plasma torch from which a plume is emitted from an aperture in the torch nozzle as the nozzle and workpiece are translated relative to one another (figure 9, column 9, lines 15+).

Claims 1, 3, 5-12 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Zarowin et al. in Rapid, Non-Contact, Damage Free Shaping of Optical & Other Surfaces with Plasma Assisted Chemical Etching, 43rd Annual Symposium on Frequency Control 1989, 623-626 (hereinafter, Zarowin Symposium '89).

The teaching of Zarowin Symposium '89 is essentially the same as that described above for Zarowin '021. Zarowin Symposium '89 provides two additional teachings: 1) the process does not introduce contamination and 2) the progress of the shaping process can be spectroscopically monitored. See the Introduction section, figures 1, 7 and 8, table 1, and the Conclusions section.

Claims 1-11, 19 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 5,336,355 issued to Zarowin et al. (hereinafter, Zarowin '355).

The teaching of Zarowin '355 is largely duplicative of Zarowin Symposium '89 and Zarowin '021. See column 1, lines 13-16, lines 43-50; column 2, lines 10-57; column 5, line 15 - column 6, line 35.

Claims 1, 2, 7, 9, 10 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 5,961,772 issued to Selwyn.

Selwyn teaches a method for shaping surfaces using a low temperature, atmospheric pressure plasma jet. Selwyn teaches generating a plasma with a CF₄ / Ar gas mixture. The method uses a plasma torch from which a plume is emitted from an aperture in the torch nozzle as the nozzle and workpiece are translated relative to one another. See: figure 1; column 1, lines 3-6; column 3, lines 1-8 and 19-32; column 4, lines 30-60; column 7, lines 20-30.

Claims 1-11, 13, 15, and 18-20 are rejected under 35 U.S.C. 102(a) as being anticipated the teaching of Böhn et al. in DE 199 25 790 A1 (hereinafter, Böhn).

Böhn teaches a method for shaping optical surfaces, including articles comprised of silicon, quartz and silica. The method relies upon a plasma beam to change the shape a surface through either an additive or subtractive process. Böhn teaches that the method does not generate contaminating deposits. Böhn teaches generating a plasma with SF₆ or CF₄ as the reactive component and Ar as the inert plasma gas. Böhn teaches that substrate support may or may not include a substrate heating element. The method uses a plasma torch from which a plume is emitted from an aperture in the torch nozzle as the nozzle and workpiece are translated relative to one another. Referring to the translation provided by applicant, see "Task of Invention" section; first full page of the "Solutions Provided by Invention" section; Section B Example 1.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Selwyn as applied to claim 1 above and further in view of US Patent 6,068,784 issued to Collins.

Selwyn does not teach using C₂F₆ as the reactive fluorine-containing etchant.

Collins teaches etching the same materials as Selwyn (for example, silicon and silicon dioxide) and Collins teaches using a gas mixture of CF₄ and Ar as well as using a mixture of C₂F₆ and Ar (column 10, lines 28-30).

It would have been obvious for one skilled in the art to use C₂F₆ in lieu of CF₄ in the method of Selwyn because Collins teaches that the CF₄ and C₂F₆ are functionally equivalent as plasma etchants for silicon containing materials.

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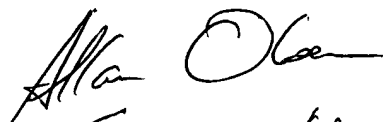
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allan Olsen whose telephone number is 703-306-9075. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski, can be reached on 703-308-4333.

The examiner's Right-Fax (direct to desktop) phone number is 703-872-9684. Alternatively, the general fax numbers for TC1700 are 703-872-9310 (non-after finals) and 703-872-9311(after-final).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.

Allan Olsen, Ph.D.
July 1, 2002


Examiner All 1746